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ABSTRACT

A developmental reading program with a unified approach to the teaching of developmental reading to nontraditional freshmen was designed and initiated at Livingston College, Rutgers University. The two-level program, consisting of curriculum modules based on behavioral objectives and performance criteria, was required for all freshmen who ranked below the fiftieth percentile in paragraph comprehension on the McGraw Hill Basic Skills System Reading Test. Level one stressed literal comprehension development through the following modules: notetaking and study skills, organizational skills, literal comprehension skills, dictionary and library skills, vocabulary skills, and test-taking skills. In addition, level one students were required to study two hours a week in the reading center. Level two focused on inferential and evaluative skills through these six modules: inferential comprehension, reorganization of information, test-taking skills, library skills, critical evaluation, and vocabulary skills. Posttest results, determined by repetition of the McGraw Hill reading test, indicated significant improvement in student reading skills after participation in both course levels. (Tables, charts, and references are appended.) (MAI)

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Developmental Reading at Livingston College 1974-1976

a final report

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TABLE OF CONTENTS

	Page
Acknowledgements	iii
List of Tables	iv
List of Charts	vi
INTRODUCTION	1
Academic Foundations at Rutgers University	1
Academic Foundations at Livingston College	2
Chapter I: IDENTIFICATION OF THE TARGET POPULATIONS	5
Introduction	5
The McGraw-Hill Reading Test	6
The Departmental Reading Test	11
Procedure	14
Summary	14
Chapter II: DESCRIPTION OF LIVINGSTON STUDENTS	16
Chapter III: DESCRIPTION OF THE READING PROGRAM	20
Introduction	20
Level I: Analytical and Critical Reading 185	21
Level II: Analytical and Critical Reading 187	26
The Reading Center	27
Level IA: Special Section A.C.R. 185	27
Special Section E.S.L.	28
Counseling	30
Summary	32

TABLE OF CONTENTS (continued)

	Page
Chapter IV: RESULTS AND DISCUSSION. .	33
Introduction.	33
Results and Discussion.	36
Summary	48
REFERENCES	49

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LIST OF TABLES

Table		Page
1.	McGraw-Hill Reading Test, Paragraph Comprehension Subtest, Experimental Conditions, Descriptive Data. . .	9
2.	McGraw-Hill Reading Test, Paragraph Comprehension Subtest, Mean Standard Scores of Selected Groups of Livingston College Students . . .	10
3.	Departmental Reading Test, Correlations between Two Independent Graders' Scores . . .	13
4.	McGraw-Hill Reading Test, Paragraph Comprehension Subtest, Descriptive Data, Incoming Students, 1974-1976. . .	17
5.	McGraw-Hill Reading Test, Total Test, Descriptive Data, Incoming Students, 1974-1976. . .	18
6.	Comprehensive English Language Test, Pre- and Posttest Mean Scores, Fall Semester 1975. . . .	31
7.	Comprehensive English Language Test, Pre- and Posttest Mean Scores, Spring Semester 1976. . .	31
8.	McGraw-Hill Reading Test, Standard Score Pre- and Posttest Means and Standard Deviations, Fall Semester 1974.	37
9.	McGraw-Hill Reading Test, Standard Score Pre- and Posttest Means and Standard Deviations, Fall Semester 1975.	38

LIST OF TABLES (continued)

Table		Page
10.	McGraw-Hill Reading Test, Standard Score Pre- and Post-test Means and Standard Deviations, Fall Semester 1974. .	39
11.	McGraw-Hill Reading Test, Standard Score Posttest Means and Standard Deviations, Spring Semester 1976.	40
12.	McGraw-Hill Reading Test, Standard Score Pre- and Post-test Means and Standard Deviations by Initial Paragraph Comprehension Subtest Percentile Ranks, Fall Semester 1974.	43
13.	McGraw-Hill Reading Test, Standard Score Pre- and Post-test Means and Standard Deviations by Initial Paragraph Comprehension Subtest Percentile Ranks, Fall Semester 1975	44
14.	McGraw-Hill Reading Test, Standard Score Pre- and Post-test Means and Standard Deviations for Students Exempt from Level II.	46
15.	Frequency Distribution of Pre-test Paragraph Comprehension Percentile Ranks, Students Exempt from Level II.	47

LIST OF CHARTS

Chart		Page
1.	Curriculum Outline for Level I: Analytical and Critical Reading 185	22
2.	Curriculum Outline for Level II: Analytical and Critical Reading 187.	25

INTRODUCTION

Academic Foundations at Rutgers University

From time to time American education has adjusted itself to an influx of "new" students demanding entrance into its well-guarded gates, for example World War II and Korean War veterans, inner city students, women seeking entrance to private men's colleges, and, more recently, still a newer student, differing from the more typical college student primarily in educational opportunity, not in native ability or desire for self-improvement. These students, lacking certain basic skills and information necessary for academic success,were formerly excluded from the college experience. The situation was ameliorated as institutions began to study the causes of and to develop effective remedies for these students' deficiencies.

Rutgers University has attempted to meet its responsibility to prevailing groups of "new" students, during the 1960's through its Fifteen High Schools, Transitional Year, and Urban University programs. These led to more far-reaching initiatives in the 1970's, the most significant of which was the development and implementation of the Academic Foundations concept at Rutgers University under the leadership of a committee appointed by Dr. Richard Schlatter, then Provost of the University. This committee,with Dean Milton Schwebel serving as chairperson, provided the University with a blueprint to meet the changing needs of higher education in New Jersey, with particular emphasis on the needs of some minority and other disadvantaged students.

At the present time Academic Foundations exists in the various colleges of Rutgers University as a department and/or a unit providing and merging old and new educational initiatives for maximum efficiency in programming and performance. These units continue to offer services to the original population for which they were established, but now envision an opportunity to help all students needing assistance in the area of basic skills.

Academic Foundations at Livingston College

Livingston College, a unit of Rutgers University, opened in 1969 as a counteraction to social inequality. The college was designed to respond to and act as an agent for change within a larger urban environment and to serve students from that environment. Consequently, Livingston recruits and educates large numbers of students who might be considered "non-traditional." A consciously pluralistic community, the

student population at the college includes, in addition to approximately 25 percent black and Puerto Rican enrollment, large numbers of women, students from low-income backgrounds, veterans, and older persons.

Educational literature is replete with data describing the marked deficit in the level of essential skills performance by many minority group students classified in the lower socioeconomic levels of our society. Students from a non-English-speaking background have different, but related, difficulties. The deficits manifest themselves chiefly in poor literal and critical reading comprehension and study habits, weaknesses which tend to restrict or prevent success in many subject-matter areas and also in the higher forms of conceptual and communications skills.

Because the source of these problems is often long-standing inferior educational practices and provisions, as well as inadequate environmental incentives, their negative effect is reflected in students' attitudes, aspirations, and performance.

Although Livingston College was committed from the beginning to fulfilling an educational promise to the target population, there were no systematic or integrated programs of diagnosis, instruction, and evaluation. In an attempt to develop a systematic program for the building of basic skills, the Department of Academic Foundations decided to implement a unified approach to the teaching of developmental reading.

The two reading courses traditionally offered by the department were revised: The Level I course was to deal primarily with the skills involved in literal comprehension, and the Level II course was

to concentrate mainly on interpretation and evaluation. The faculty identified a set of basic skills deemed necessary for successful reading at both levels and organized these into various curriculum modules. The modules were, in turn, designed so that behavioral objectives and performance criteria could easily be developed for each one, thus forming a core curriculum that all faculty members were expected to follow in order to minimize the disparity in skills covered within the different sections of one course.

Pre- and posttesting using both standardized and departmentally developed measures of reading comprehension were projected to assess the viability of the curriculum and the overall effectiveness of the program, as well as to provide uniform measures of successful completion of the courses.

The various aspects of this approach, tests used, description of the program, results, as well as difficulties encountered are discussed in the present report.

CHAPTER I

IDENTIFICATION OF THE TARGET POPULATION

Introduction

Several criteria were involved in the selection of students required to enroll in the developmental reading program. Initially, all freshmen and selected transfer students were tested in reading and writing as part of the overall evaluation of their proficiency in basic skills. Because of the number involved and the need to keep the testing as objective as possible, a standardized reading test was selected.

Students who scored below the fiftieth percentile in paragraph comprehension on the standardized reading test were tentatively identified as the target population and required to

enroll in the developmental reading program. During the first week of classes, a non-standardized reading test, developed by the reading faculty and designed to assess the most important skills taught in the reading courses, was administered to all students.

Students' paragraph comprehension percentile according to the standardized test, as well as performance on the departmentally developed test were considered in their final placement within the program.

The McGraw-Hill Reading Test

The standardized test used to screen all incoming students was the reading test of the McGraw-Hill Basic Skills System (1970).

> The MHBSS Reading Test is designed for administering to high school juniors and seniors who are planning to attend college, to two-year college students, and to freshmen and sophomores in four-year colleges and universities. The test is intended to measure the student's general level of competence in those reading skills which are most relevant to academic success. The reading materials used in the test are taken directly from college textbooks (Examiner's Manual, p. 7).

The test contains three parts. Part I measures reading rate and comprehension and contains two reading selections, one representing recreational reading matter, at the level of most newspapers, magazines, or novels, and one, more difficult, representing college textbook material. Part II measures skimming and scanning and tests a student's

ability to locate given information quickly within textbook materials, e.g., an index, a table of atomic weights, a bibliography, and a textbook page. Part III, paragraph comprehension, measures the following five skills:

1. recognition of the main idea,

2. recognition of specific facts and understanding of their importance and function,

3. recognition and understanding of general scientific principles in both the physical and social sciences,

4. discovery of paragraph organization and structure,

5. critical evaluation of the author's writing: discrimination of fact from opinion, recognition of tone and intent, and judgment of validity arguments (Examiner's Manual, p. 7).

The test was normed on a population including approximately equal numbers of freshmen in four-year colleges, two-year college students, and "college-bound" high school juniors and seniors. Detailed data on reliability and validity are presented in the examiner's manual.

While the norming samples used have been criticized as inadequate for today's standards (Black 1972), the test has several advantages. It is a survey test with diagnostic subtests; it has high face validity and a clear manual; it is one of the few tests available at the college level (Mavrogenes, et al., 1974); and finally, it is keyed to the McGraw-Hill Basic Skills System, which is available in the Livingston reading center.

Standardized reading tests have recently come under close scrutiny. Carver (1970) pointed out that what most reading tests really measure is reading aptitude -- hence their generally high correlation with intelligence. Weaver and Bickley (1967) presented evidence that subjects who had not read the selections on standardized reading tests scored up to 67 percent as many items correctly as subjects who had read them. Similar findings were presented by Tuinman (1973).

Pyrczak (1972) investigated the thirty-six comprehension questions of the Nelson Denny Reading Test (Form B), developing an index to evaluate the extent to which correct answers to comprehension questions could be identified in the absence of the reading passages on which they were based. He obtained a mean raw score of 12.64 for students answering the questions without having seen the passages on which they were based. The score obtainable for this test by chance should be about 7.20. Knowledge of both the "chance score," which Fry (1971) called the Orang-Utang score, and the "questions only" score of a reading test is useful when interpreting students' performances.

In order to investigate the behavior of the paragraph comprehension subtest of the McGraw-Hill Reading Test, two educational psychology classes at Livingston College were given the test under both total chance condition (answer sheets only) and questions only condition (no reading passages). The expected chance score for the thirty item (four choices per item) paragraph comprehension subtest is 7.5. The relevant scores obtained are presented in Table 1.

As indicated by Table 1, the mean raw score of 7.07 obtained by chance

Table 1: MC GRAW-HILL READING TEST
PARAGRAPH COMPREHENSION SUBTEST
EXPERIMENTAL CONDITIONS
DESCRIPTIVE DATA

Description	Raw Score	Standard Score
Chance Scores N = 30		
Mean	7.07	28.40
S.D.	2.23	4.67
Range	3.00 - 12.00	19.00 - 38.00
Questions Only Scores N = 30		
Mean	12.17	38.00
S.D.	3.19	5.55
Range	5.00 - 18.00	24.00 - 48.00

confirmed the expected score. This score, incidently, would translate as a percentile ranking of 1, based on the four-year college freshmen norms.

The mean raw score of 12.17 obtained under the questions only condition can be compared to the mean raw score of 12.64 reported by Pyrczak (1972) for the Nelson Denny Reading Test, administered under similar conditions. A raw score of 12 would equal a percentile ranking of 8, based on the four-year college freshmen norms.

Table 2: MC GRAW-HILL READING TEST PARAGRAPH COMPREHENSION SUBTEST MEAN STANDARD SCORES OF SELECTED GROUPS OF LIVINGSTON COLLEGE STUDENTS

Description	N	Mean	S.D.
Total chance condition	30	28.40	4.67
Questions only condition	30	38.00	5.55
Entering freshmen, fall 1974	737	50.73	10.02
Entering freshmen, fall 1975	814	52.03	9.51
Transfer students, fall 1974	93	52.46	9.41
Transfer students, fall 1975	383	57.09	8.81
Transfer students with A.A. degree, January 1976	49	58.82	10.34

In order to compare the scores obtained under experimental conditions with those of various groups of Livingston students, Table 2 presents selected mean standard scores.

Based on the information contained in Table 2, it appears than the McGraw-Hill Reading Test discriminates quite well between various student populations. While the experimental data indicate that effectiveness of a students' obtained

score as a pure measure of "reading comprehension" may be contaminated by variables such as general intelligence, previous knowledge, test-wiseness, etc., this represents a general feature of standardized reading comprehension tests and does not necessarily interfere with the purpose for which they are designed, i.e., to measure the general level of competence in reading skills relevent to academic success. Also, the cut-off point used at Livingston College -- a fiftieth percentile rank on paragraph comprehension--appears to be a point below which a student might reasonably benefit from developmental reading instruction.

Kussat (1976) reported statistically significant gains for students enrolled in developmental reading courses, both on the paragraph comprehension subtest and the total test. Similar gains detailed in the results section of this report also support the hypothesis that the McGraw-Hill Reading Test is sensitive to changes in student performance and suitable not only for survey purposes but for purposes of evaluating student achievement and program effectiveness as well.

The Departmental Reading Test

In order to supplement the McGraw-Hill scores with a more personalized evaluation of students' reading performance, a non-standardized test was developed by the reading faculty and directed toward the most important skills taught in the reading courses, e.g., the ability to identify the topic and main idea, to obtain literal and implied information, and to define key words in a reading passage. This test has been evaluated during the past two years and is still being revised by the faculty

in an effort to improve its reliability and validity.

In its early form, the test consisted of a reading selection of approximately 1500 words at the college readability level according to the Fry Nomograph (Fry, 1968). Students were asked to describe the topic and main idea and to answer five short-answer literal questions and five short-answer inferential questions. Five vocabulary items measured the students' ability to define selected words according to their use in the selection. In the grading of the test, the literal and inferential questions were weighted differently for Level I and Level II students.

Since this test was administered and graded by individual instructors, the scores represent comparatively subjective judgements of students' performances. In order to evaluate both the test and the grading of it more objectively, a double-grading procedure was introduced: Each test was graded independently by two faculty members, with the mean of the two scores considered as a student's obtained score.

Informal comparisons between the scores of independent graders revealed large differences in some cases, and in order to evaluate the grading procedure, correlation coefficients were obtained between the first and second graders' scores. Those relating to the December 1975 test administration are presented in Table 3.

As indicated by the correlation coefficients, faculty opinion as to acceptable answers varied considerably between the sections of the test, with the widest discrepancy of opinion existing in relation to students' topic and main idea statements. The figures reported in Table 3 suggest that further revision of

Table 3: DEPARTMENTAL READING TEST CORRELATIONS BETWEEN TWO INDEPENDENT GRADERS' SCORES

Description	Correlation Coefficient
Level I N = 56	
Topic and main idea	.58
Literal information	.79
Inferential information	.61
Total test	.85
Level II N = 98	
Topic and main idea	.32
Literal information	.48
Inferential information	.65
Total test	.75

the test and/or refinement of the grading procedure is necessary.

Thus, while the test may be helpful within the context of each instructor's system of grading, it cannot yet be used to evaluate student achievement in general. In an attempt to achieve a more uniform standard of grading, members of the faculty are presently involved in rephrasing several of the test questions and improving the answer key.

Procedure

A students' paragraph comprehension percentile rank as measured by the McGraw-Hill Reading Test and based on the four-year college freshmen norms published in the examiner's manual was used as the initial criterion for placement within the program. Students who ranked below the thirtieth percentile were assigned to the Level I course, and students ranking between the thirtieth and the fiftieth percentiles were enrolled in the Level II course.

The departmental reading test was used to adjust the final placement of those students whose McGraw-Hill score had been borderline. Thus, a Level I student with a paragraph comprehension percentile rank close to thirty who also scored well on the departmental test was moved to the Level II course; or a Level II student with a rank close to fifty who also scored well on the departmental test might have been exempted from the program altogether.

Students placed in the Level II course normally left the program after one semester, whereas students initially placed in the Level I course normally proceeded to Level II in the following semester.

Summary

The measurement instruments described in the previous sections were used to identify the target population for the developmental reading program. A students' percentile rank on the paragraph comprehension subtest of the McGraw-Hill Reading Test represented the initial selection criterion. Students whose scores fell below the thirtieth percentile were enrolled in the Level I course, and students who ranked between the thirtieth

and fiftieth percentiles were enrolled in the Level II course.

During the first week of classes the departmental reading test was administered, and based on their performance students whose McGraw-Hill scores had been borderline were considered for replacement within the program or for total exemption.

Thus, both standardized and departmentally developed measures of reading comprehension were used to determine a students' final placement within the reading program.

CHAPTER II

DESCRIPTION OF LIVINGSTON STUDENTS

The procedures used to identify the target population for the developmental reading courses involved the large-scale administration of the McGraw-Hill Reading Test; and descriptive data, as presented in Tables 4 and 5, are available for groups of students who took the test from 1974 to 1976. Table 4 presents the relevant information for the paragraph comprehension subtest, Table 5 the data based on the total test. The figures reported represent the majority of, but not all, incoming Livingston students, since some fail to attend the required testing sessions. The sampling, however, is substantial enough to allow meaningful interpretation.

Inspection of these tables reveals that transfer students, as expected,

Table 4: MC GRAW-HILL READING TEST PARAGRAPH COMPREHENSION SUBTEST DESCRIPTIVE DATA INCOMING STUDENTS 1974 - 1976

Description		N	Mean Standard Score	S.D.	Range	N Below the 50th Percentile
Fall 1974						
	Freshmen	737	50.73	10.02	22.00 - 78.00	373 = 51%
	Transfer	93	52.46	9.41	32.00 - 73.00	42 = 45%
Fall 1975						
	Freshmen	814	52.03	9.51	10.00 - 78.00	363 = 45%
	Transfer	383	57.07	8.81	22.00 - 84.00	85 = 22%
January 1976						
	Freshmen and Transfer	100	54.16	8.36	31.00 - 73.00	36 = 36%
	A.A. Degree Transfer	49	58.82	10.34	38.00 - 84.00	10 = 20%

Table 5: MC GRAW-HILL READING TEST TOTAL TEST DESCRIPTIVE DATA INCOMING STUDENTS 1974-1976

Description		N	Mean Standard Score	S.D.	Range
Fall 1974					
	Freshmen	737	51.95	10.42	21.00 - 81.00
	Transfer	93	52.82	9.37	30.00 - 75.00
Fall 1975					
	Freshmen	814	53.11	9.85	11.00 - 81.00
	Transfer	383	58.05	10.11	22.00 - 81.00
January 1976					
	Freshmen and Transfer	100	54.40	8.75	23.00 - 75.00
	A.A. Degree Transfer	49	57.55	8.30	41.00 - 75.00

scored higher than incoming freshmen, and that the 1975 incoming students generally scored higher than the previous year's class. Also as expected, fewer transfer students than incoming freshmen obtained a percentile rank below fifty. However, as indicated by the range of scores, the reading level of both groups varied widely.

Inspection of the scores of January 1976 transfer students with Associate in Arts degrees reveals that there is no significant difference between them and the fall 1975 regular admission transfer students. Also, the percentage of A.A. degree students ranking below the fiftieth percentile does not differ markedly from the percentage of fall 1975 regular admission transfer students obtaining similar scores.

The figures presented in Tables 4 and 5 represent the beginning of a data base on the reading achievement level of students entering Livingston College. It is now possible to compare Livingston students with students at other institutions and to compare the achievement level of developmental reading program students with the incoming freshmen population at large.

CHAPTER III

DESCRIPTION OF THE READING PROGRAM

Introduction

The Department of Academic Foundations offered two developmental reading courses -- Level I: Analytical and Critical Reading 185, which focused on literal comprehension; and Level II: Analytical and Critical Reading 187, which concentrated on inferential and evaluative skills. The courses, each carrying four college credits, combined instruction in developmental reading and general study skills appropriate for college students. Both courses included a systematic approach to vocabulary development, since word knowledge has been isolated as one clearly identifiable factor contributing to reading comprehension (Davis, 1968).

The curriculum was divided into modules, each of which consisted of a set of clearly defined subskills which were stated in behavioral terms, facilitating the identification of specific teaching materials, the development of criterion referenced tests, and the selection of of performance-based standards of mastery. However, because some faculty members were hostile to the introduction of accountability measures (which would come as a result of the development of performance objectives) the detailed development of the modules remained fragmentary.

Special sections met the needs of students whose language background was not primarily English, and during the 1975-1976 academic year, those students who scored below the tenth percentile on paragraph comprehension were similarly provided with special instruction. Finally, counselors within the department worked closely with faculty to help students with personal and academic problems.

Level I: Analytical and Critical Reading 185

This course dealt primarily with skills needed to obtain literal information from printed materials. In addition to learning how to identify the topic, main idea, and details of a reading selection, students were introduced to study methods, dictionary, library, and testtaking skills. The six modules into which the curriculum was divided are presented in Chart I.

Detailed objectives for the subskills within each unit as far as they were developed are contained in the Administrative Interim/Final Report by Purnell (1975). The following are brief general descriptions of each module.

Chart 1: CURRICULUM OUTLINE FOR LEVEL I ANALYTICAL AND CRITICAL READING 185

Module 1: Notetaking and Study Skills

- Notetaking
- Study method (e.g. SQ3R, OK5R)
- Marking textbooks and articles

Module 2: Organizational Skills

- Components of a book
- Components of a chapter, article, or paper
- Paragraph structure
- Paragraph purpose
- Signal words

Module 3: Literal Comprehension Skills

- Topic
- Main idea
- Details

Module 4: Dictionary and Library Skills

- Types of dictionaries
- Information contained in a dictionary entry
- Card catalog
- Reference section
- Indexes and abstracts

Module 5: Vocabulary Skills

- Latin roots and prefixes
- Greek roots and prefixes
- Content clues

Module 6: Testtaking Skills

- Readiness
- Strategies for objective testtaking

Module 1: Notetaking and Study Skills. Students are introduced to one of the popular study methods, e.g., SQ3R, or OK5R (Pauk, 1974), discuss the necessity for a timetable establishing definite periods for homework and studying, and are alerted to the importance of well-organized class notes and a documented system of effective notetaking (Palmatier, 1973). Also covered in this unit are several conventions for marking written materials, e.g., underlining important ideas, and identification of key points with asterisks or other symbols.

Module 2: Organizational Skills. This unit introduces students to various helpful ways in which materials are organized. A book, for example, often contains a table of contents listing the topics of each chapter, and it may provide an index or bibliography to aid readers in obtaining particular information. Similarly, articles and paragraphs usually follow definite organizational patterns which are useful to a reader. Finally, knowledge of the function of such words as "to illustrate," "however," "another example," etc., better enables students to follow the development of ideas within a passage.

Module 3: Literal Comprehension Skills. This module, the heart of the Level I course, is designed to enable students to recognize, recall, and identify the topic, main idea, and important related information within a reading selection. As an example of specific objectives of a module, the following ones relating to the concept of main ideas are presented:

1. Students will be able to distinguish between a

specifically stated main idea and one that has to be inferred.

2. Where stated explicitly, students will be able to identify the main idea of a paragraph, a section, or an entire selection as distinguished from the topic or subject area.

3. Students will be able to use one or several conventional marking techniques to identify the main idea in a written selection, where explicitly stated.

4. Students will be able to record appropriately the main idea of a paragraph, a section, or an entire selection, as distinguished from the topic or subject area.

Module 4: Dictionary and Library Skills. This module introduces students to types of dictionaries available, teaches them how to interpret the information contained in dictionary entries, and initiates them in the use of such library resources as the card catalog, the reference section, indexes, and abstracts.

Module 5: Vocabulary Skills. Although vocabulary development is continuous throughout the course, in this unit students concentrate on Latin and Greek prefixes and rootwords (Feinstein, 1969), and the use of context clues in inferring the meaning of unfamiliar words.

Module 6: Testtaking Skills. This unit acquaints students with some strategies useful in taking objective tests (Millman and Pauk, 1969).

Chart 2: CURRICULUM OUTLINE FOR LEVEL II ANALYTICAL AND CRITICAL READING 187

Module 1: Inferential Comprehension

- Topic
- Main idea
- Details

Module 2: Reorganization of Information

- Classifying
- Outlining
- Summarizing
- Synthesizing

Module 3: Testtaking Skills

- Review objective testtaking
- Essay examinations

Module 4: Library Skills

- Review ACR 185 Library Skills
- Research techniques
- Evaluation procedures

Module 5: Critical Evaluation

- Structure
- Style
- Purpose
- Use of Language
- Development of ideas

Module 6: Vocabulary Skills

- Review of Latin and Greek roots and prefixes
- Denotative usage
- Connotative usage

Level II: Analytical and Critical Reading 187

This course assumed that students had become somewhat skillful at literal comprehension and continued their development by focusing on inferential and evaluative skills. Test-taking and library skills were expanded, and a unit was presented on reorganizing information through summarizing, synthesizing, and other techniques. The curriculum's six modules are presented in Chart 2.

Module 1: Inferential Comprehension. This module teaches ways in which the reader can infer information not explicitly stated by the author.

Module 2: Reorganization of Information. In this unit, students are required to reorganize information obtained from a reading passage by classifying, outlining, summarizing, and synthesizing.

Module 3: Testtaking Skills. This unit familiarizes students with some of the skills involved in taking essay and other subjective-type examinations.

Module 4: Library Skills. In this module, students refine their skills by applying some research techniques, locating information by means of various literary reference tools, evaluating, and organizing the information so obtained.

Module 5: Critical Evaluation. This unit develops the students' ability to evaluate a written passage critically in terms of its structure, style, purpose, etc.

Module 6: Vocabulary Skills. Students review the Latin and Greek roots and prefixes introduced in the Level I course,

and in addition, become familiar with denotative and connotative word usage.

The Reading Center

The reading center was an integral part of the program, and all Level I students were required to work there for two hours per week in addition to their regular class periods.

The center was equipped with a wide variety of audio-visual and printed materials (ranging in readability from third grade to college level), including various subject area and general reading improvement selections. A director with extensive experience in individualized instruction and several assistants, upperclass undergraduates and graduate students in reading and related fields, helped provide a setting in which students could work at their own rate on materials relevant to their particular needs.

Level IA: Special Section A.C.R. 185

During the 1974-1975 program year only two of the initially lowest scoring students improved their reading skills to such an extent that they were exempted from the Level II course. In order to assess whether more individualized instruction would benefit such students in the 1975-1976 academic year, all students initially scoring below the tenth percentile on the McGraw-Hill Reading Test were required to enroll in a special section of the Level I course.

This section met in the reading center and each student's work was individually planned, with an assignment sheet serving as a record of achievement and a plan for future assignments. At the beginning of

the semester students were made aware of the amount of work to be covered, thus making them responsible to a large extend for their own progress.

Instruction alternated between small group sessions and individual work. The groups covered as much as possible of the regular Level I course curriculum, and the individual work assignments provided extensive practice in literal comprehension skills, using mainly materials available in the center.

The combination of group work and individual assignments appears to be a promising approach to helping these lowest scoring students, the target population of this special section within the Level I course. In the fall of 1975, fourteen of the thirty-two students in the section improved their reading skills, as measured by the McGraw-Hill test, to such an extent that they were exempted from the Level II course. The comparative figures for similarly low scoring students in the regular classroom program in fall 1974, were two students out of thirty-one.

More detailed information about the achievement of these students, both for the 1974 and 1975 fall semesters, is contained in the Results section of this report, specifically in Tables 13, 14, 15, and 19.

Special Section E.S.L.

The needs of non-native speakers of English frequently cannot be met within the reading program's regular sections. Such students may require instruction in English as a Second Language, and so a section within the program was designed to help such students improve their English comprehension and language proficiency. The special E.S.L. section attempted to improve skills in the following areas:

1. Oral skills to insure satisfactory communication required by academic and interpersonal situations at Livingston College.

2. Aural skills to provide satisfactory communication in both academic and interpersonal situations.

3. A developmental sequence of reading skills which include expansion of existing vocabulary, the organization of ideas into meaningful relationships, and the development of reading comprehension to the level of academic performance required of students.

4. A cultural orientation to the values and norms of behavior required of students in academic and interpersonal situations.

5. A knowledge of the linguistic patterns and the development of fluency in the performance of varied structural patterns and usage of English phonemes required for satisfactory communication in academic and social situations.

The E.S.L. program consisted of two levels (E.S.L. I. and E.S.L. II.), with students proceeding through the developmental sequences of the program on an individual basis. Those students requiring more time to develop satisfactory language skills remained in the program until an appropriate level of proficiency was reached. The maximum number of credits allotted to an E.S.L. course was four, and upon completion of the E.S.L. sequence students continued in the regular A.C.R. program, normally on the 187 level.

Since the McGraw-Hill Reading Test is inappropriate for students enrolled in the special E.S.L. section, the Comprehensive English Language Test (CELT) developed by Harris and Palmer (1970) was used to evaluate language proficiency. Students' progress can be compared to national norms, based on the scores of comparable non-native English speaking students throughout the United States reported in the CELT Technical Manual.

The progress of Livingston E.S.L. students for the 1975-1976 academic year is reported in Tables 6 and 7.

Counseling

Consistent with the notion that a student's academic development must be considered in relation to his personal needs, aspirations, and problems, counseling within the Academic Foundations department represented an integral part of the program. Counselors assisted students in adjusting to college life, assessing vocational and educational interests, and dealing with academic and emotional needs.

Close cooperation between the reading faculty and the counseling staff was fundamental to the effectiveness of this approach, and frequent communication between them, as well as careful monitoring of performance in the classroom and reading center, made it possible to determine which students were encountering difficulties due to poor study habits, or any of a number of academic or personal problems.

A special student accountability committee, comprised of faculty and counselors, contacted students who by mid-semester were not showing normal progress. Attempts were made to discuss the problems faced by such students and to work out a strategy for overcoming them.

Table 6: COMPREHENSIVE ENGLISH LANGUAGE TEST PRE- AND POSTTEST MEAN SCORES FALL SEMESTER 1975

Description	N	Listening Test	Structure Test	Vocabulary Test
Norm Group A	155	81	77	75
Livingston E.S.L. I	10			
Pretest		66	46	39
Posttest		78	62	53
Livingston E.S.L. II	10			
Pretest		85	60	60
Posttest		83	77	82

Table 7: COMPREHENSIVE ENGLISH LANGUAGE TEST PRE- AND POSTTEST MEAN SCORES SPRING SEMESTER 1976

Description	N	Listening Test	Structure Test	Vocabulary Test
Norm Group A	155	81	77	75
Livingston E.S.L. II	11			
Pretest		(a)	60	62
Posttest		(a)	69	66

(a) incomplete data.

Summary

The developmental reading program basically consisted of two courses, the Level I course dealing primarily with literal comprehension, and the Level II course focusing mainly on inferential and evaluative skills. Each level's curriculum was subdivided into modules, and the specific skills within each module were tested in terms of performance objectives. Faculty members were expected to follow the core curriculum so that all students within one level, regardless of the section in which they were enrolled, received instruction in a common set of basic skills.

The approach appeared promising, particularly in terms of identification and development of teaching materials specifically related to each unit, the devising of criterion-referenced pre- and posttests for each unit, and finally, the establishment of a performance-based uniform standard of achievement for each level. The approach, however, met with considerable opposition by several faculty members, and the program's implementation remained fragmentary.

Both the reading center and the counseling staff were integrally connected with the reading program, representing a network of supportive services for furthering student's academic and personal development. Finally, the needs of students with divergent language backgounds, or those students scoring below the tenth percentile on paragraph comprehension, were met through special sections designed to concentrate on the skills most relevant to them.

CHAPTER IV

RESULTS AND DISCUSSION

Introduction

Because ultimate success of a developmental reading program manifests itself in generally improved student performance, a long-term study considering such variables as student grades, number of courses completed, types of courses taken, would be appropriate. The present report is comparatively limited in scope and documents student achievement within the courses as measured by the McGraw-Hill Reading Test.

The four variables taken into account in determining a students' achievement at each semester's end can also theoretically be used for an overall evaluation of the program:

1. Performance in class, including midterm and final exams.

2. Performance in the reading center.

3. Performance on the Departmental Reading Test.

4. Performance on the McGraw-Hill Reading Test.

The procedures used to assess classroom performance vary from instructor to instructor, and may be highly subjective; they are, therefore, difficult to use in an overall evaluation of the program. Similarly, the students' reading center work is difficult to judge objectively, due to the variety of materials and personnel involved. Moreover, not all students participated in the activities of the reading center.

The departmental reading test, developed by the faculty and directed toward the demands of a specific curriculum, appeared to be a promising approach. During the construction of the pre- and posttest, a careful effort was made to choose reading selections of comparable length and readability level and to provide the same number of literal, inferential, and vocabulary questions for each form of the test. However, due to the rather high variability in the grading, the test cannot yet be used as a general evaluation instrument.

The McGraw-Hill Reading Test, then, represents the only objective measure for inferring student achievement, teaching effectiveness, and overall program effectiveness.

When considering the data, it is necessary to keep in mind the limitations generally inherent in standardized tests, as well as the following specific considerations:

First, that since the principal aim in tabulating the McGraw-Hill scores was to investigate student progress within the developmental reading courses, the statistical analyses were based only on the test data of those students who received credit for the courses.

Second, that since some instructors within the department objected to standardized testing as an indicator of student achievement, several of those instructors' students failed to take the test. Thus, while the figures reported in the tables represent the majority of students in the reading courses, they do not account for all those who received credit for the courses during the 1974-1976 time period.

Third, the McGraw-Hill Reading Test as indicated earlier, is inappropriate for speakers of divergent language backgrounds who need special instruction in English as a Second Language. Therefore, as long as students remained in the special E.S.L. sections their McGraw-Hill scores were not included in the data analysis.

Finally, in the absence of a control group, any inferences about student achievement must remain tentative. However, short of identifying students as needing developmental reading instruction, and then postponing that instruction for a semester or two, it would be difficult to obtain a matched control group for the students in the developmental reading program.

After tests were administered according to standard procedures outlined in the examiner's manual, the original answer sheets were sent to the Psychological Corporation in New York for computer scoring and the production of computer cards. Several B.M.D. and S.P.S.S. programs were used in the analysis of the

data, primarily the S.P.S.S. Matched Paired T-Test.

Results and Discussion

Overall results. In general, the data appear to indicate the following trends:

1. During the fall semesters students in both the Level I and Level II courses significantly improved their reading skills.

2. During the spring semesters students taking the Level I course improved their reading skills, approaching a level of performance attained by Level I students in the fall semesters.

3. During the spring semesters, students taking the Level II course did not improve their reading performance beyond the level attained at the end of the Level I course.

4. Those students who had the lowest scores initially and were enrolled in the special reading center section of the Level I course improved their performance dramatically as compared to the performance of similarly low scoring students who had remained in the regular Level I sections.

Since student scores on paragraph comprehension represented the initial placement criterion and were considered along with the total test scores in the final evaluation of student progress, both figures are included in the tables. The relevant data for the years 1974-1976 are presented in Tables 8 through 11.

Table 8: MC GRAW-HILL READING TEST STANDARD SCORE PRE- AND POSTTEST MEANS AND STANDARD DEVIATIONS FALL SEMESTER 1974

Description	September 1974 Form A		December 1974 Form B		T Value	Significance Level
	Mean	S.D.	Mean	S.D.		
Level I N = 134						
Paragraph Comp.	39.58	5.81	45.38	7.88	9.96	**
Total Test	42.00	7.54	48.30	8.98	11.69	**
Level II N = 59						
Paragraph Comp.	46.73	4.54	50.83	7.95	3.75	**
Total Test	47.81	5.61	54.34	9.10	6.84	**

** $p < .01$

Table 9: MC GRAW-HILL READING TEST STANDARD SCORE PRE- POSTTEST MEANS AND STANDARD DEVIATIONS SPRING SEMESTER 1975

Description	December 1974 Form B Mean	S.D.	May 1975 Form A Mean	S.D.	T Value	Significance Level
Level I N = 39						
Paragraph Comp.	(a)		45.69	10.87		
Total Test			47.05	10.23		
Level II N = 67						
Paragraph Comp.	43.36	7.32	44.19	8.23	.90	N.S.
Total Test	45.84	8.04	48.58	9.08	3.34	**

(a) incomplete data

** p <.01

Table 10: MC GRAW-HILL READING TEST STANDARD SCORE PRE- AND POSTTEST MEANS AND STANDARD DEVIATIONS FALL SEMESTER 1975

Description	September 1975 Form A		December 1975 Form B		T Value	Significance Level
	Mean	S.D.	Mean	S.D.		
Level I N = 82						
Paragraph Comp.	39.72	4.24	48.57	6.38	11.97	**
Total Test	41.94	7.00	53.80	8.67	13.90	**
Level II N = 86						
Paragraph Comp.	48.23	1.87	53.74	6.51	7.69	**
Total Test	50.45	4.64	61.57	6.03	15.21	**

** $p < .01$

Table 11: MC GRAW-HILL READING TEST STANDARD SCORE POSTTEST MEANS AND STANDARD DEVIATIONS SPRING SEMESTER 1976

Description	December 1975 Form B Mean	December 1975 Form B S.D.	April 1976 Form A Mean	April 1976 Form A S.D.	T Value	Significance Level
Level I N = 19						
Paragraph Comp.	(a)		44.26	7.30		
Total Test			44.47	6.22		
Level II N = 68						
Paragraph Comp.	(a)		45.27	8.73		
Total Test			47.24	8.62		

(a) incomplete data

Tables 8 and 10, which contain the data for the fall semesters, indicate that the measured posttest scores were significantly higher than the pretest scores for both the paragraph comprehension subtest and the total test. Students at both Level I and Level II demonstrated this improvement in measured reading performance.

The paragraph comprehension mear standard scores of 50.83 (fall 1974) and 53.74 (fall 1975) achieved by the Level II students who left the program after one semester can be favorably compared with the mean scores obtained by the various groups of Livingston College freshmen, detailed in Table 2. Thus, if performance on the McGraw-Hill Reading Test is considered as a criterion, those students who were initially required to complete only the Level II course improved their reading skills during one semester to such an extent that they can be assumed to be as well prepared for their future college experience as the majority of freshmen entering Livingston College.

From Tables 9 and 11, which contain the data for the spring semesters, a slightly different picture emerges. The Level I students' spring posttests indicate a measured achievement level approaching that of Level I students in the fall semesters (Tables 8 and 10), although the difference in posttest means between Level I students in the fall of 1975 and Level I students in the spring of 1976 is considerable. Overall however, the data appear to indicate that Level I students generally reached a level of reading performance consistent with the goals of the Level I course.

The Level II data for the spring semesters, also contained in Tables 9 and 11, represents the reading achievement of those students who had originally been placed in the Level I course and

proceeded through the entire reading program. As indicated by the posttest scores, these students did not demonstrate any further gains in reading skills over and above the level attained at the end of the previous semester. This lack of progress in the spring semesters should be more carefully investigated if it continues in subsequent years.

Results by level of pretest performance. In order to assess student achievement for various levels of pretest performance, the fall semester Level I students' scores were analyzed according to pretest paragraph comprehension percentile rank. Tables 12 and 13 detail the achievement of those students who initially ranked below the tenth percentile on paragraph comprehension, and those who initially ranked above the twentieth percentile on paragraph comprehension.

Although inspection of Tables 12 and 13 shows that all students improved their reading skills, regardless of initial achievement level, the data also indicate that, overall, the students retained their relative rank order, with the initially lowest scoring group also achieving the lowest posttest mean and the initially highest scoring group the highest posttest mean.

Of particular interest in Table 13 is the performance of those students who initially ranked below the tenth percentile on paragraph comprehension. This group of students represented the population required to enroll in the special reading center section of the Level I course, described earlier in this report. After comparing the posttest scores of these students with the previous year's posttest scores of similarly low scoring students (Table 12) who had remained in the regular sections of the Level I course,

Table 12: MC GRAW-HILL READING TEST STANDARD SCORE PRE- AND POSTTEST MEANS AND STANDARD DEVIATIONS BY INITIAL PARAGRAPH COMPREHENSION SUBTEST PERCENTILE RANKS FALL SEMESTER 1974

Description	September 1974 Form A		December 1974 Form B		T Value	Significance Level
	Mean	S.D.	Mean	S.D.		
0 - 9th percentile on pretest paragraph comprehension N = 48						
Paragraph Comp.	33.60	4.49	40.46	7.44	6.47	**
Total Test	35.94	5.79	43.40	8.68	7.93	**
10 - 19th percentile on pretest paragraph comprehension N = 55						
Paragraph Comp.	41.11	1.70	46.73	6.38	6.79	**
Total Test	43.55	5.69	49.04	8.54	6.53	**
20 + percentile on pretest paragraph comprehension N = 31						
Paragraph Comp.	46.13	2.68	50.61	6.70	3.68	**
Total Test	48.65	5.67	54.58	5.27	5.81	**

** $p < .01$

Table 13: MC GRAW-HILL READING TEST STANDARD SCORE PRE- AND POSTTEST MEANS AND STANDARD DEVIATIONS BY INITIAL PARAGRAPH COMPREHENSION SUBTEST PERCENTILE RANKS FALL SEMESTER 1975

Description	September 1975 Form A		December 1975 Form B		T Value	Significance Level
	Mean	S.D.	Mean	S.D.		
0 - 9th percentile on pretest paragraph comprehension N = 32						
Paragraph Comp.	35.28	2.41	47.50	6.03	12.37	**
Total Test	37.47	6.06	53.13	7.77	14.64	**
10 - 19th percentile on pretest paragraph comprehension N = 30						
Paragraph Comp.	41.13	1.57	48.73	6.40	6.49	**
Total Test	42.93	5.43	52.43	8.12	6.09	**
20th + percentile on pretest paragraph comprehension N = 20						
Paragraph Comp.	44.70	0.98	50.05	6.87	3.65	**
Total Test	47.60	5.89	56.95	10.34	6.32	**

** p < .01

the dramatic achievement of the students in the special section becomes evident. In fact, fourteen of those thirty-two students achieved posttest scores warranting exemption from the Level II course, as compared to two exemptions during the previous year. It thus appears that the reading center approach, with its combination of small group work and individualized instruction, was particularly effective for the initially lowest scoring students.

Data of students exempt from Level II. Those Level I students whose posttest scores indicated a percentile ranking above fifty on paragraph comprehension were generally exempted from the Level II course. In the fall semester 1974, thirty-one of the 134 students covered by the available data were so exempted. Comparable figures for the fall semester 1975 were thirty-nine out of eighty-two students. For the relevant data, see Table 14. The frequency distribution of these students' pretest paragraph comprehension percentile rank is presented in Table 15, which shows that during the fall semester 1974 only two students from the initially lowest scoring group improved their reading performance enough to be exempted from the Level II course. In the fall semester 1975, however, when the initially lowest scoring students attended the special reading center section, the number of exemptions was spread evenly over the various levels of pretest achievement. Thus the conclusion drawn by Kussat (1976), that for students initially scoring below the tenth percentile the probability of moving out of the program in one semester is slight, should be qualified. In fact, a student in the special section had as good a chance of moving out of the reading program in one semester as any student enrolling in the Level I course.

Table 14: MC GRAW-HILL READING TEST STANDARD SCORE PRE- AND POSTTEST MEAN AND STANDARD DEVIATIONS FOR STUDENTS EXEMPT FROM LEVEL II

Description	September Form A		December Form B		T Value	Significance Level
	Mean	S.D.	Mean	S.D.		
Fall Semester 1974 N = 31						
Paragraph Comp.	42.90	3.39	52.32	5.55	8.23	**
Total Test	47.81	4.45	56.45	4.58	10.97	**
Fall Semester 1975 N = 39						
Paragraph Comp.	40.36	4.00	53.44	4.99	15.08	**
Total Test	44.38	7.61	59.08	8.23	11.80	**

** $p < .01$

Table 15: FREQUENCY DISTRIBUTION OF PRE-TEST PARAGRAPH COMPREHENSION PERCENTILE RANKS STUDENTS EXEMPT FROM LEVEL II

Description	Fall Semester 1974 N	Fall Semester 1975 N
0 - 9th percentile on pretest paragraph comprehension	2	14
10 - 19th percentile on pretest paragraph comprehension	15	14
20th + percentile on pretest paragraph comprehension	14	11
Total	31	39

Summary

The data appear to indicate that all students improved their measured reading performance during the fall semesters, regardless of the level at which they entered the program. It also appears that the special reading center section was particularly helpful to entering students who ranked below the tenth percentile on paragraph comprehension.

During the spring semesters, however, only the Level I students appear to have improved their reading skills, with the Level II students remaining at the level of performance they had attained at the end of the Level I course. This phenomenon warrants further investigation.

It may be assumed that improved performance on a reading test reflects an improved general reading performance which should contribute to a student's overall effectiveness in college. However, these assumptions can be substantiated only by long-term studies documenting the progress of students once they have left the developmental reading program.

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